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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

OFFICIAL

Appl. No.: 09/522,421
Appellants: Stachurski et al
Filed: March 9, 2000
Art Unit: 2654
Examiner: Chawan

Conf.No.: 4064

Docket: TI-29010
Cust.No.: 23494

APPELLANTS' BRIEF (in triplicate)

Mail Stop Appeal Brief-Patents
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The attached sheets contain the Rule 192(c) items of appellants' brief. The Commissioner is hereby authorized to charge the fee for filing a brief in support of the appeal plus any other necessary fees to the deposit account of Texas Instruments Incorporated, account No. 20-0668; a fee transmittal sheet is enclosed.

Respectfully submitted,

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Rule 192(c)(1) Real party of interest

Texas Instruments Incorporated owns the application.

Rule 192(c)(2) Related appeals and interferences

There are no related dispositive appeals or interferences.

Rule 192(c)(3) Status of claims

Claims 1-4 are pending in the application with all claims finally rejected. This appeal involves the finally rejected claims.

Rule 192(c)(4) Status of amendments

There is no amendment after final rejection.

Rule 192(c)(5) Summary of the invention

The invention provides an encoding method, such as useful in digital speech encoding, which has both strong and weak predictors and the method replaces a strong predictor with a weak predictor when the strong predictor had followed a weak predictor. Application Fig.1b is a flow diagram and pages 9-10 describe the weak and strong predictors in the context of encoding a vector of Fourier coefficients for a frame of speech. Encoding an item using a predictor essentially consists of first predicting the item from a previously-encoded item and then encoding only the difference between the item and the prediction of the item. For the encoding method at issue there are two predictors available for an item to be encoded: a strong predictor and a weak predictor; for example (application page 10, last paragraph), the strong predictor could be 0.8 times the previously-encoded item and the weak predictor could be 0.2 times the previously-encoded item. The selection of which predictor to use could be based on which yields the smaller encoding error. And the inventive method adds an adjustment: when a current item being encoded has a better prediction using its strong predictor but this current item follows a previous item which had a better prediction using the previous item's weak predictor, then the current item is encoded with its weak predictor

replacing its strong predictor. This has advantages as described on application page 10.

Rule 192(c)(6) Issues

The issues presented on appeal are:

(1) whether claims 1-4 are anticipated by the McCree reference.

(2) whether claims 1-4 are supported by the specification.

(3) whether claim 4 is indefinite.

Rule 192(c)(7) Grouping of the claims

The claims are argued separately.

Rule 192(c)(8) Argument

(1) Claims 1-4 were rejected as anticipated by McCree as follows. With regard to claims 1-4, the Examiner cited essentially the entire description of McCree (column 3, line 21 through column 6, line 48) without discussion. With regard to claim 2, the Examiner cited figures 4a-4d without discussion. With regard to claim 3, the Examiner cited column 4, lines 4-60 and column 5, lines 38-65 for claim 3 without discussion.

Appellants reply as follows. With regard to claims 1-4, McCree has no suggestion of strong and weak predictors. Rather, the only "prediction" in McCree seems to be the pitch prediction (column 5, line 29) as used for an adaptive codebook of a CELP encoder and the general linear prediction coding of speech (LPC). There is no suggestion of strong and weak predictors as are required by sole independent claim 1; and thus no suggestion of the replacement of a strong predictor by a weak predictor under any circumstances.

With regard to claim 2, McCree figures 4a-4d graph amplitude as a function of time and illustrate, successively, a first formant of natural speech, a synthetic resonance decay, the impulse response of a pole/zero filter to enhace resonance, and the enhanced resonance decay. There is no suggestion of Fourier coefficients as required by dependent claim 2.

With regard to claim 3, McCree column 4, lines 4-60 and column 5, lines 38-65 discuss enhancement filters, which relate to the invention in McCree, but has no suggestion of predictors. The parameters in McCree (β=0.5 and α=0.8) are for the enhancement filter in column 5, line 35; these are not predictor weights as in claim 3.

(2) Claims 1-4 were rejected as unsupported by the specification. The Examiner asserted that how a strong predictor is replaced by a weak predictor is not in the disclosure.

Appellants reply that the paragraph bridging application pages 7-8 describes weak and strong predictors and the use of these predictors (including replacement) is described, with examples, on application page 9, second to last paragraph through page 10, last pargraph.

(3) Claim 4 was rejected as indefinite.

Appellants reply that one of ordinary skill in the encoding art would understand the terminology and method of the claims.

Rule 192(c)(9) Appendix

1. An encoding method using strong and weak predictors, comprising the step of:
(a) replace a strong predictor following a weak predictor with a weak predictor.

2. The method of claim 1, wherein:
(a) said strong predictor and said weak predictor predict the Fourier coefficients for the pitch harmonics.

3. The method of claim 2, wherein:
(a) said strong predictor equals a multiple of the Fourier coefficients of a prior frame with the multiple in the range of 0.7 to 1.0; and
(b) said weak predictor equals a second multiple of the Fourier coefficients of said prior frame with said second multiple in the range of 0.0 to 0.3.

4. The method of claim 1, wherein:
(a) said step (a) of claim 1 replaces a second successive strong predictor with a corresponding second weak predictor.